Provincial Scope Document (multi-year)

MECHANICAL CAD (Secondary)

Contest length: 3.5 hours + 30 minutes introduction.

Contest start: 8:30am **Check-in time: 8:00am**

Purpose of the Challenge:

To evaluate students' knowledge and skill in one of 4 categories: Reverse Engineering, Assembly, Part Design, or Parametric Modeling.

Skills & Knowledge to be Tested:

Problem Solving:
- Students may be required to solve open ended problems and interpret misleading or erroneous data. Such decision making will obviously affect the completion of the project.

CAD Techniques:
- Use of fundamental CAD techniques to produce a 3D model(s), assembly & or drawing set to International Drafting Standards.
- Ability to produce a CAD drawing to a defined scale using Templates and/or Borders.
- Knowledge of CAD standards and proficiency of chosen software.
- Ability to import files for use during the competition.
- Ability to export drawing sets as a pdf.
- Ability to export 3D models as a variety of file types such as .stl or .step.

Mechanical Drafting Procedures:
- Knowledge and understanding of Mechanical Drafting Standards and Symbols (ISO/ANSI)
- Ability to create and appropriately layout the necessary views and/or sections, given a mechanical component or drawing.
- Accuracy and completeness of chosen views, linetypes, hatching and mechanical drafting conventions.
- Correct use of, and accuracy of, dimensioning on appropriate views.
- Presence of, and positioning of, required notations, symbols, annotations, and text.
- The ability to use CAD to generate information such as areas, volumes, angles etc.

- Ability to generate Auxiliary, Orthographic and other views.

Hardware / Software:

All software packages will be original versions
No add-on applications will be allowed

Specifications:

Hardware:
- Computers, monitors and a three button mouse will be provided.

Software:
Any drafting software will be allowed for mechanical design. Contact Tech Chair to verify the software you want to use is available.

Software and hardware are regional specific and based on what is available at our host location, so some variation may occur, students may be requested to bring software or a laptop containing the software at the discretion of the host committee.

Should other software packages or platforms be required, the contestant and their mentors are responsible to provide systems support in order to complete the project as specified. The alternate software will require prior approval of the local committee to allow adequate preparation time.

We will do our best to accommodate the software of the competitors choosing, however competitors may be required to bring their own device if the requested software is not available. If a student is successful at the regional level they must notify the skills Canada BC and indicate which software they intend to use upon registration for the BC Skills Competition.

No software reference manuals, textbooks or electronic data will be permitted for the duration of the competition.

Only digital storage devices provided to the contestant during the contest will be authorized for use. The installation use of user profiles will be permitted with prior approval of the committee.

Tools To Bring To Competition

Necessary:
- ✓ Pencil(s)
- ✓ Metric and imperial scales (rulers)
- ✓ Vernier or Digital Caliper

Optional but helpful:
- ✓ Machinist Handbook (or suitable reference text)
- ✓ Blank paper (for sketching)
- ✓ Graph paper (for sketching)
- ✓ Calculator
- ✓ Small / large circle stencils
- ✓ Thread Pitch Gauges (Metric and Imperial)
- ✓ Radius Gauges
- ✓ Eraser

Note: competitors may also bring a 3D mouse or other items that they wish to use*
*all additional items (not listed above) must be approved for use by Competition host

Items That Will Be Supplied At The Competition
- ✓ Competitor Package with competition explanation and information
- ✓ All items required to complete the competition (other than those listed above)

Technical Committee:

Chad Hipwell   Technical Chair   chad_hipwell@sd33.bc.ca

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